

***Hibbertia proberae* (Dilleniaceae), a new, rare and geographically anomalous species from the Great Victoria Desert of Western Australia**

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SHORT COMMUNICATION

Hibbertia proberae K.R.Thiele *sp. nov.* was discovered in the remote Plumridge Lakes Nature Reserve on the edge of the Great Victoria Desert in Western Australia in autumn 2018. It was highly unexpected at that location as very few species of *Hibbertia* Andrews occur so far east in southern Western Australia, the only others being *H. crispula* J.M.Black, which has disjunct populations on the eastern and western margins of the Great Victoria Desert, and disjunct populations of the Western Australian species *H. exasperata* (Steud.) Briq. near Queen Victoria Springs and the Officer Basin. Subsequently, a second specimen was mounted at PERTH, collected from the Mulga Rock Uranium Project in 2016. *Hibbertia proberae* is morphologically distinct from any other known species in western or eastern Australia.

Hibbertia proberae* K.R.Thiele, *sp. nov.

Type: Plumridge Lakes Nature Reserve, Western Australia [precise locality withheld for conservation reasons], 31 March 2018, K.R. Thiele 5460 (*holo:* PERTH 09083421; *iso:* AD, CANB, K, MEL).

Rigidly-branched, prickly-leaved *shrubs* to 0.8 m high, multi-stemmed at base and resprouting after fire; young branchlets yellowish, mostly glabrous but with short, simple, whitish to pale brown hairs in the leaf axils, some of which continue up the stem part way to the base of the next leaf; older stems with pale grey, fissured, papery bark decorticating in strips and flakes. *Leaves* spreading-erect, rather crowded towards the branch tips and immediately below the flowers, shortly rectangular to linear, 4–8 mm long, 0.8–1.4 mm wide, the margins strongly recurved and nearly meeting the midrib below, thus largely obscuring the abaxial lamina; adaxial surface coarsely tuberculate, glabrous or with sparse, very short, forward-directed, simple hairs from the tubercles when young, often also with spreading, slightly longer, scattered simple hairs not associated with tubercles near the lamina base; abaxial midrib level with the margins or somewhat sunken, prominent, smooth and glabrous; abaxial lamina (where narrowly exposed on either side of the midrib) densely papillate; apex straight-pungent. *Flowers* solitary, terminating growth units and lateral short-shoots, sessile; *primary bract* broadly ovate-acuminate, c. 3 mm long, glabrous except for minutely fimbriate margins; *secondary bracts* 2–5, the uppermost similar to the primary bract, the lower ones grading into the leaves. *Sepals* 5,

broadly ovate, c. 5 mm long, pungently acuminate, smooth, the outer mostly glabrous except for sparse, minute hairs towards the apex abaxially and adaxially; midribs not prominent; inner sepals similar to the outer in size, indumentum and apex shape but broader and with slightly denser and more extensive indumentum. *Petals* 5, yellow, obovate, 6.5–8 mm long, emarginate. *Stamens* 15–18, all on one side of the gynoecium, slightly curved but \pm erect; filaments 0.8–1 mm long, fused for about half their length; anthers broadly rectangular, 1–2 mm long, dehiscing by introrse, longitudinal slits. *Staminodes* absent but outermost stamens often somewhat reduced. *Carpels* 2; ovaries compressed-globular, densely pubescent; styles erect, curved excentrically from the carpel apex, c. 1.8 mm long. *Ovules* 2–4 per carpel. *Fruiting carpels* and seeds not seen. (Figure 1)

Diagnostic features. *Hibbertia proberae* can be distinguished from all other species in the genus that have ericoid leaves (i.e. sclerophyllous and with the margins recurved to the midrib) by the following combination of features: stamens on one side of two hairy carpels; glabrous to very sparsely hairy young stems with minute, simple hairs; tuberculate, straight-pungent leaves; pungent sepals with minute, simple hairs towards the apex; 15–18 \pm erect stamens; and 2–4-ovulate carpels.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 16 Sep. 2016, *D. Angus* 2348 (PERTH); 31 Mar. 2018, *K.R. Thiele* 5476 (PERTH).

Phenology. At the type locality *H. proberae* was flowering in late March following good summer rains. *D. Angus* 2348 was flowering in September. In the desert environment where it occurs, flowering is almost certainly strongly influenced by rainfall events. The region is dominated by winter rainfall, with most species probably having a spring flowering peak if conditions permit.

Distribution and habitat. Only known from three sites, the type locality and another a few kilometres distant, in Plumridge Lakes Nature Reserve, and at the Mulga Rock Uranium Project c. 100 km to the south-west of the type location. Both sites are on the western edge of the Great Victoria Desert. In Plumridge Lakes plants were growing in the swales of large, red sand dunes adjacent to areas with lateritic gravel, in open shrublands with *Eucalyptus youngiana*, *Banksia elderiana*, *Hannafordia bissillii*, *Acacia* spp., *Micromyrtus* sp., *Anthrotroche pannosa* and *Triodia basedowi*. The Mulga Rock specimen was collected from a yellow sandplain in a *Eucalyptus certaocorys*, *Hakea francisiana* woodland over a low open shrubland including *Allocasuarina acutivalvis*, *Acacia ligulata*, *A. desertorum*, *Westringia rigida*, *Triodia desertorum* and *Chrysothrix distigmatosa*.

Conservation status. To be listed as Priority Two under Conservation Codes for Western Australian Flora (M. Smith pers. comm.).

Etymology. The epithet honours my wife Dr Suzanne Prober, a noted Australian ecologist and life-long companion on many field trips, including the one where *H. proberae* was discovered. Suzanne is very keen on arid and semi-arid landscapes, much preferring them to areas of kwongan (where most Western Australian species of *Hibbertia* grow). Hence, this is an apt dedication.

Vernacular name. Desert Guinea-flower

Notes. *Hibbertia proberae* occurs in an unusual environment for the genus, in the swales between large sand dunes and on yellow sandplains on the far western edge of the Great Victoria Desert. It is superficially somewhat similar to the Western Australian species *H. crassifolia* (Turcz.) Benth. and *H. aurea* Steud., sharing with them ericoid leaves, sessile flowers with 3–6 scarious bracts grading



Figure 1. *Hibbertia proberae*. A – flowering plant in habitat at the type locality; B – flowering branch (K.R. Thiele 5476). Photographs by S. Prober (A) and K.R. Thiele (B).

into the leaves, and nearly glabrous sepals. However, those species have non-pungent leaves, stamens curved forward over the carpels and arranged like a hand of bananas, with the styles curved forward beneath them, and consistently two ovules per carpel, while in *H. proberae* the leaves are very pungent, the stamens and styles are both \pm erect (though slightly curved), and many flowers have four ovules per carpel. In its habit and leaves it is also superficially similar to *H. exasperata* and its relatives, but these differ in having stamens distributed in five groups around five glabrous carpels.

Knowledge of phylogenetic relationships in *Hibbertia* is very incomplete, and it is not possible on current knowledge to determine close relatives of *H. proberae*.

Acknowledgements

With heartfelt thanks to Suzanne Prober, whose patience on many field trips while I stop for yet another blooming *Hibbertia* has finally paid off.